REMARKS

The Office Action objected to the specification for informalities. The Office Action also rejected claims 8-14 and 17-18 under 35 U.S.C. § 101 as directed to non-statutory subject matter. The Office Action also rejected claims 1, 2, 8, and 9 under 35 U.S.C. § 102(e) as being anticipated by United States Patent 7,079,581 issued to Noh, et al. ("Noh"). The Office Action also rejected claims 5-7 and 12-14 under 35 U.S.C. § 102(b) as being anticipated by United States Patent number 6,160,846 issued to Chiang, et al. ("Chiang"). The Office Action also rejected claims 3-4 and 10-11 under 35 U.S.C. § 103(a) as being unpatentable over Noh. The Office Action also rejected claims 15-18 Noh in view of United States Patent 5,650,860 issued to Uz ("Uz").

In this Amendment, Applicants have amended claims 1, 5, 8, 12, and 15-17. Applicants have canceled claims 2-4 and 9-11. Applicants have added new claims 19-27. Applicants do not surrender any equivalents to any amended limitation or elements of any claim. Accordingly, claims 1, 5-8, and 12-27 will be pending after entry of this Amendment. Applicants respectfully request reconsideration of the rejections.

I.   Applicant Statement of Substance of the Interview

Applicants' representatives had an in-person interview with the Examiner on 8/27/2008. Examiner David N. Werner and Examiner Mehrdad Dastouri were present at the interview. In addition, Applicants' representative Mani Adeli was present at the interview.

During the interview, Applicants' representatives reviewed the independent claims and the specification with the Examiners. Applicants' representatives also discussed cited references, namely Noh, Chiang, and Uz. No agreement was reached regarding the claims.

Applicants thank the Examiner for the in-person interview. The present Applicants' statement of the substance of the interview is submitted with this Amendment and Response to Office Action, and is therefore timely.

II. Objections to the Specification

The Office Action objected to the specification for informalities. Specifically, the Office Action objected to the phrase "a computer-readable media" on page 18, lines 15-16, and to the last sentence on page 24. Applicants have amended the specification to read "a computer readable medium" on page 18, and to indicate the end of the last sentence on page 24.

III. Rejection of Claims 8, 12-14 and 17-18 Under § 101

The Office Action rejected claims 8, 12-14 and 17-18 under § 101 as being directed to non-statutory subject matter. The Office Action states that normally these claims would be statutory. The Office Action then cites page 18 of the Applicants' specification and states that the cited section defines the claimed computer system and medium as encompassing non-statutory matter such as "a communication channel" or "a computer network". The following paragraph is the section in question:

> A rate controller using the temporal transmission model and other teachings of the present invention can be implemented in computer instructions on any suitable computer system. The computer instructions may be placed onto a computer-readable media and distributed. The computer instructions may also be transmitted across a communication channel to receiving system. For example, a computer program implementing the teachings of the present invention may be transmitted from a server computer across a computer network to a client computer system and then executed on that client computer system.

The cited paragraph states that the present invention can be implemented in computer instructions. The computer instructions may be placed onto a computer readable medium, and may also be transmitted across a communication channel to receiving system. The specification does not say that the computer readable medium may be transmitted across a communication channel, nor

does it say that the computer program transmitted across a computer network is the computer readable medium. Accordingly, the claims do not encompass non-statutory matter, and therefore are not non-statutory as a whole. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the § 101 rejections of claims 8, 12-14, and 17-18.

IV. Rejection of Claim 1

The Office Action rejected claim 1 under 35 U.S.C. § 102(e) as being anticipated by Noh. Claim 1 recites a method of scaling a bit budget for encoding a digital video picture. The method receives several different mapping relationships that specify several different ways for scaling the bit budget based on several different levels of concern regarding optimal use of the decoder buffer. The method receives a value for a relaxation parameter that specifies which of the several mapping relationships is to be used to scale the bit budget of the digital video picture. Based on a decoder buffer usage, the method scales the bit budget by using the specified mapping relationship. The method encodes the digital video picture by using the scaled bit budget. The receiving the several mapping relationships, receiving the value for the relaxation parameter, and scaling the bit budget are performed by a rate controller.

Applicants respectfully submit that Noh does not disclose or suggest the method of claim 1 for several reasons. *First*, Noh does not disclose or suggest a method that receives several different mapping relationships that specify several different ways for scaling the bit budget based on several different levels of concern regarding optimal use of the decoder buffer. *Second*, Noh does not disclose or suggest a method that receives a value for a relaxation parameter that specifies which of the several mapping relationships is to be used to scale the bit budget of the digital video picture. *Third*, Noh does not disclose or suggest a method that, based on a decoder buffer usage, scales the bit budget by using the specified mapping relationship.

Accordingly, Applicants respectfully submit that Noh does not render claim 1 unpatentable. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 1.

V.   Rejection of Claims 5-7

The Office Action rejected claims 5-7 under 35 U.S.C. § 102(b) as being anticipated by Chiang. Claims 6-7 are dependent directly or indirectly on claim 5. Claim 5 recites a method of tracking digital video information complexity. The method determines a complexity measure for a current digital video picture. The complexity measure for the picture accounts for several macroblocks in the picture. The method combines the complexity measure for the current digital video picture to a running average complexity measure for the series of digital video pictures. The method encodes the digital video information utilizing the running average complexity measure. The determining the complexity measure and the combining are performed by a rate controller.

Applicants respectfully submit that Chiang does not disclose or suggest the method of claim 5. *First*, Chiang does not disclose or suggest a method that determines a complexity measure for a current digital video picture that accounts for several macroblocks in the picture. The Office Action cites the bit rate R_i of Chiang as disclosing the recited complexity measure. However, the cited bit rate R_i is the bit rate for a particular macroblock (*see* Chiang, col. 10, lines 35-37), whereas the the complexity measure recited in claim 5 is a complextiy measure for the current digital video picture, and accounts for several macroblocks rather than being a complexity measure for the particular macroblock.

Second, Chiang does not disclose or suggest a method that combines the complexity measure for the current digital video picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significantly changing the running average complexity measure for the series of digital video pictures. The Office Action

cites column 10, lines 65-67 of Noh, which states that selected quantizer scale should be an average of the quantizer scales used to code the macroblocks in the previous picture. The Office Action states that this corresponds with the recited running average complexity measure of claim 5. However, the quantizer scale is inversely related to the bit rate, not directly related as stated in the Office Action. Furthermore, calculating an average of all quantizer scales from the previous frame is not a running average, because a running average, as commonly understood, is an average that is regularly updated based on new data. The average described in Noh is calculated once, and is not a running average.

Accordingly, Applicants respectfully submit that Chiang does not render claim 5 unpatentable. As claims 6-7 are dependent directly or indirectly on claim 5, Applicants respectfully submit that claims 6-7 are patentable over Chiang for at least the reasons that were discussed above for claim 5. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 5-7.

VI.   Rejection of Claim 8

The Office Action rejected claim 8 under 35 U.S.C. § 102(e) as being anticipated by Noh. Claim 8 recites a computer readable medium storing a computer program which when executed by a processor scales a bit budget for a frame of video. The computer program receives several different mapping relationships that specify several different ways for scaling the bit budget based on several different levels of concern regarding optimal use of the decoder buffer. The computer program receives a value for a relaxation parameter that specifies which of the several mapping relationships is to be used to scale the bit budget of the digital video picture. Based on a decoder buffer usage, the computer program scales the bit budget by using the specified mapping relationship. The computer program encodes the digital video picture by using the scaled bit budget. The receiving the several

mapping relationships, receiving the value for the relaxation parameter, and scaling the bit budget are performed by a rate controller.

The Office Action rejected claim 8 on the same rationale as claim 1. Accordingly, for reasons similar to those stated above for claim 1, Applicants respectfully submit that Noh does not disclose or suggest a computer program that either (i) receives several different mapping relationships that specify several different ways for scaling the bit budget based on several different levels of concern regarding optimal use of the decoder buffer, (ii) receives a value for a relaxation parameter that specifies which of the several mapping relationships is to be used to scale the bit budget of the digital video picture, or (iii) based on a decoder buffer usage, scales the bit budget by using the specified mapping relationship..

Accordingly, Applicants respectfully submit that Noh does not render claim 8 unpatentable. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejection of claim 8.

VII.   Rejection of Claims 12-14

The Office Action rejected claims 12-14 under 35 U.S.C. § 102(b) as being anticipated by Chiang. Claims 13-14 are dependent directly or indirectly on claim 12. Claim 12 recites a computer readable medium storing a computer program which when executed by a processor tracks digital video information complexity. The computer program determines a complexity measure for a current digital video picture. The complexity measure for the picture accounts for several macroblocks in the picture. The computer program combines the complexity measure for the current digital video picture to a running average complexity measure for the series of digital video pictures. The computer program encodes the digital video information utilizing the running average complexity measure.

The Office Action rejected claim 12 on the same rationale as claim 5. Accordingly, for reasons similar to those stated above for claim 5, Applicants respectfully submit that Chiang does not disclose or suggest either (i) determines a complexity measure for a current digital video picture that accounts for several macroblocks in the picture or (ii) combines the complexity measure for the current digital video picture to a running average complexity measure for a series of digital video pictures in a manner that prevents the current digital video picture from significantly changing the running average complexity measure for the series of digital video pictures.

Accordingly, Applicants respectfully submit that Noh does not render claim 8 unpatentable. As claims 9-11 are dependent directly or indirectly on claim 8, Applicants respectfully submit that claims 9-11 are patentable over Noh for at least the reasons that were discussed above for claim 8. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 8-11.

VIII. Rejection of Claims 15-16

The Office Action rejected claims 15-16 under 35 U.S.C. § 103(a) as being unpatentable over Noh in view of Uz. Claim 16 is dependent directly on claim 15. Claim 15 recites a method of encoding a sequence of video frames. The method allocates an initial value for a bit budget for a current frame in the sequence of video frames. The method determines an initial value for a scale value based on a percentage of a memory buffer space used. The scale value is for scaling the bit budget to prevent an underflow or an overflow of the memory buffer. The method determines a relaxation control value to relax the scaling of the bit budget. The method determines a final bit budget for the current frame based on the scale value adjusted with the relaxation control value.

Applicants respectfully submit that the cited references do not disclose or suggest the method of claim 15. For instance, the cited references do not disclose or suggest a method that determines an initial value for a scale value based on a percentage of a memory buffer space used, determines a

relaxation control value to relax the scaling of the bit budget, and determines a final bit budget for the current frame based on the scale value adjusted with the relaxation control value. The Office Action concedes that Noh does not disclose or suggest determining a final bit budget. The Office Action then states that Uz discloses determining a final bit budget and that it would be obvious to combine Noh and Uz. However, Applicant respectfully submits that it would not be obvious to combine the two. Noh describes a deviation parameter D for a particular frame that is based on characteristics of the particular frame (*see* Noh, col. 8, lines 19-34). The deviation CE_i, on the other hand, is used for frame $i+1$, and is based on the encoding of the previous frame i. Furthermore, the deviation CE_i is not a scaling value, as it is merely added to the bit budget rather than scaling it.

Accordingly, Applicants respectfully submit that the cited references do not render claim 15 unpatentable. As claim 16 is dependent directly on claim 15, Applicants respectfully submit that claim 16 is patentable over the cited references for at least the reasons that were discussed above for claim 15. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 15-16.

IX. Rejection of Claims 17-18

The Office Action rejected claims 17-18 under 35 U.S.C. § 103(a) as being unpatentable over Noh in view of Uz. Claim 18 depends directly on claim 17. Claim 17 recites a computer readable medium storing a computer program which when executed by a processor encodes a sequence of video frames. The computer program allocates an initial value for a bit budget for a current frame in the sequence of video frames. The computer program determines an initial value for a scale value based on a percentage of a memory buffer space used. The scale value is for scaling the bit budget to prevent an underflow or an overflow of the memory buffer. The computer program determines a relaxation control value to relax the scaling of the bit budget. The computer program determines a

final bit budget for the current frame based on the scale value adjusted with the relaxation control value.

The Office Action rejected claim 17 on the same rationale as claim 15. Accordingly, for reasons similar to those stated above for claim 15, Applicants respectfully submit that the cited references do not disclose or suggest a method that determines an initial value for a scale value based on a percentage of a memory buffer space used, determines a relaxation control value to relax the scaling of the bit budget, and determines a final bit budget for the current frame based on the scale value adjusted with the relaxation control value.

Accordingly, respectfully submit that the cited references do not render claim 17 unpatentable. As claims 18 is dependent directly on claim 17, Applicants respectfully submit that claim 18 is patentable over the cited references for at least the reasons that were discussed above for claim 17. In view of the foregoing, Applicants respectfully request reconsideration and withdrawal of the rejections of claims 17-18.

X.   New Claims 19-27

In this Amendment, Applicants have added new claims 19-27. Applicants submit that these claims are fully supported by the specification and that these claims are patentable over the cited references.

CONCLUSION

In view of the foregoing, Applicants respectfully submit that all the claims, namely claims 1, 5-8, and 12-27, are in condition for allowance. Reconsideration of the rejections is requested. Allowance is earnestly solicited at the earliest possible date.

Applicants have submitted all known required fees. Applicants believe that no additional fee is required for the submission of this Amendment and Response. However, in the unlikely event that the Commissioner determines that additional fees, extensions of time, and/or other relief are required, Applicants petition for any required relief. Moreover, Applicants authorize the Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to Deposit Account No. **50-3804** referencing **APLE.P0036**.

Respectfully Submitted,

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Date

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